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Continuous Low-Dose Radiation Effects on Successive Litters of the Albino Rat[1]

SIDNEY O. BROWN, GEORGE M. KRISE, AND HENRY B. PACE

Radiation Biology Laboratory, Texas Engineering Experiment Station, Texas A. and M. College, College Station, Texas

INTRODUCTION

The aim of this investigation was to study the effect of continuous low-dose γ-radiation on successive litters of albino rats born to mothers who remained continuously in the radiation field. Levels used were 0, 2, 5, 10, and 20 r daily given over a 23-hour period. A secondary aim was to study the effect of this continuous radiation on the fertility of the offspring irradiated *in utero*. The investigations of Bagg (*1*) indicated that continuous radiation influenced primarily the eyes and the circulatory systems of offspring irradiated *in utero* by injections of 5 mc radium but that it did not prevent reproduction. The work of Russell *et al.* (*2*) demonstrated that continuous irradiation during the first 2 weeks of prenatal life of the mouse appeared to have no specific effect other than a decrease in the total reproductive span of the females. In their study the pregnant female mice were subjected to 14 days of continuous Co^{60} radiation at 87 r/week (12.4 r/day). Russell *et al.* (*3*) have reported that females are more sensitive than males to radiation, an observation which in general is in agreement with that of other investigators. The studies of Russell *et al.* (*2*) indicate clearly that continuous γ-radiation cannot be compared with the same radiation administered at a specific stage in the process of embryogenesis.

EXPERIMENTAL PROCEDURES

Radiation Facility

The source consisted of two 1-curie Co^{60} pellets separated by a vertical distance of 6 feet within the source holder. The source holder was so designed that the source could be remotely operated in two positions, storage and radiating. The storage position placed the two Co^{60} pellets behind two lead shields of a thickness calculated

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